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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/720,607      | 11/24/2003  | David M. Lowe        | 2003B126            | 4238             |

23455 7590 10/12/2006

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| EXAMINER |
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HAILEY, PATRICIA L

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| ART UNIT | PAPER NUMBER |
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1755

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                       |                                    |  |
|------------------------------|---------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/720,607  | <b>Applicant(s)</b><br>LOWE ET AL. |  |
|                              | <b>Examiner</b><br>Patricia L. Hailey | <b>Art Unit</b><br>1755            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 13, 16, 18-21, 25-27, 30-39 and 44-50 is/are pending in the application.
- 4a) Of the above claim(s) 46-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13, 16, 18-21, 25-27, 30-39, 44, and 45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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Applicants' remarks and amendments, filed on July 27, 2006, have been carefully considered. Claims 17, 28, 29, 42, 43, and 51 have been canceled; no new claims have been added.

Claims 13, 16, 18-21, 25-27, 30-39, and 44-50 remain pending in this application.

### ***Election/Restrictions***

1. Claims 46-50 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected process for selectively removing alkynes or diolefins from a feedstock also containing olefins, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 14, 2004.

Claims 13, 16, 18-21, 25-27, 30-39, 44, and 45 remain under consideration by the Examiner.

### ***Withdrawn Objections and Rejections***

The objections to claim 51 and to the Disclosure, stated in the previous Office Action, have both been withdrawn in view of Applicants' cancellation of claim 51, and of Applicants' amendment to the Specification.

The 103(a) rejection of claims 13, 16-21, 25-29, 34-39, 42-45, and 51 as being unpatentable over Rende et al. (U. S. Patent No. 6,486,370) stated in the previous Office Action, has been withdrawn in view of Applicants' amendments and persuasive arguments traversing this rejection.

***New Ground of Rejection***

The following New Ground of Rejection is being made in view of Applicants' amendment to claim 13.

***Claim Rejections - 35 USC § 112***

***2. Claims 13, 16, 18-21, 25-27, 30-39, 44, and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.***

Claim 13 lacks antecedent basis for the phrase "said first and second metal components", see line 7 therein.

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***Maintained Rejections***

The following rejections of record have been maintained; the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

***3. Claims 13, 16, 18-21, 25-27, 30-39, and 44 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Uzio et al. (U. S. Patent No. 6,498,280).***

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Uzio et al. teach a catalyst comprising at least one support, at least one element from Groups 8, 9, or 10 of the Periodic Table, and at least one element from Group 13 of the Periodic Table. See col. 4, lines 8-14 of Uzio et al.

Examples of Groups 8, 9, or 10 metals include rhodium, ruthenium, iron, and cobalt. Although platinum is preferred, the selected metal(s) from these groups is present in the catalyst in amounts ranging from 0.01% to 5% by weight with respect to the total catalyst weight. See col. 4, lines 15-21 of Uzio et al.

The Group 13 metal is selected from indium, gallium, and thallium, preferably indium, and is present in amounts ranging from 0.005% to 3% by weight relative to the total weight of the catalyst. See col. 4, lines 26-29 of Uzio et al.

Examples of the support include aluminas. See col. 4, lines 42-80 of Uzio et al.

Patentees' catalyst can be prepared by successive steps of depositing the metals, using any technique known in the art. These deposition steps can be performed in any order. Deposition can be performed by dry or excess impregnation, or by an ion exchange method. Calcining can be performed at temperatures of about 500°C. See col. 4, lines 52-64 of Uzio et al.

The metals can be deposited using any known precursors that are soluble in an aqueous medium; for the alkali and Groups 13 and 14 metals, decomposable salts such as nitrates can be employed. See col. 5, lines 34-45 of Uzio et al.

Uzio et al. do not teach the specifically claimed combinations of Applicants' catalyst compositions, e.g., of a rhodium component, an indium component, and a third component selected from iron, cobalt, and ruthenium. However, because this reference

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teaches a catalyst comprising metal components corresponding to those respectively claimed, as well as percentage amounts of these components that are numerically within the respectively claimed percentage ranges, one of ordinary skill in the art finds ample motivation in selecting the metals disclosed in Uzio et al. to readily obtain Applicants' claimed invention.

With respect to the claim limitations regarding the metal components "predominantly contained in an outer surface layer of the support", it is considered that because Uzio et al. teach that "any technique known to the skilled person" for depositing the metal components is employable to obtain Patentees' catalysts, one of ordinary skill in the art would reasonably expect that the known techniques encompassed by Uzio et al. would result in Patentees' metal components being present on the surface layer of the support.

**4. Claims 13, 16, 18-21, 25-27, 30-39, 44, and 45 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd et al. (U. S. Patent No. 6,503,866).**

Shepherd et al. teach a catalyst comprising an alumina support (col. 3, line 7 to col. 4, line 4), and a platinum group component (e.g., ruthenium, rhodium) present in catalytically effective amounts, e.g., from about 0.01 to about 2 mass % of the final catalyst. The platinum group component may be incorporated into the alumina support in any suitable manner, such as coprecipitation, ion exchange, or impregnation, and may be provided by compounds such as rhodium nitrate. See col. 4, lines 8-61 of Shepherd et al.

Optionally, the catalyst may contain other components or mixtures thereof, which act alone or in concert as catalyst modifiers to improve activity, selectivity, or stability. Examples of these components include indium. Catalytically effective amounts of this component may be added in any suitable manner to the carrier material during or after its preparation, or to the catalytic composite before, while, or after other components are being incorporated. Amounts of this component ranges from about 0.01 to about 5 mass % of the composite. See col. 5, line 59 to col. 6, line 4 of Shepherd et al.

Further, the platinum-group metal components may be dispersed homogeneously in the catalyst, or may be present as a surface layer component. See col. 4, line 62 to col. 5, line 6 of Shepherd et al. This disclosure, along with the aforementioned disclosure that the modifying components can be added to the composite before, while, or after other components are being incorporated, is considered to read upon the claim limitations that the claimed components "are predominantly contained in an outer surface layer".

In the preparation of the catalyst, following the incorporation of the desired components with the alumina support, a calcination step is employed. Calcination typically takes place at a temperature of from about 370°C to about 600°C. See col. 6, lines 21-42 of Shepherd et al., as well as col. 7, lines 9-39.

Also, a reduction step is employed. Reduction conditions include a temperature of from about 315°C to about 650°C. See col. 7, lines 40-64 of Shepherd et al., especially lines 50-56.

Shepherd et al. do not teach the specifically claimed combinations of Applicants' catalyst compositions, e.g., of a rhodium component, an indium component, and a third component selected from iron, cobalt, and ruthenium. However, because this reference teaches a catalyst comprising metal components corresponding to those respectively claimed, as well as percentage amounts of these components that are numerically within the respectively claimed percentage ranges, one of ordinary skill in the art finds ample motivation in selecting the metals disclosed in Shepherd et al. to readily obtain Applicants' claimed invention.

### ***Response to Arguments***

Despite Applicants' amendments to the instant claims to now recite the phrase "consisting of", as opposed to "comprising", the cited references of record are considered to continue to read upon the instant claims, with respect to the claimed components and respective amounts thereof. The fact that the cited art discloses additional components, optionally present or not, does not detract from the references' teachings relevant to the instant claims, especially since Applicants' claims recite the optional presence of a third metal component selected from iron, cobalt, and ruthenium.

Although the cited references do not teach or suggest the claimed depth dispersion in Applicants' claimed catalyst, it is the Examiner's position that, because the prior art discloses the employment of metal components comparable to that respectively claimed, in addition to disclosing suitable techniques for incorporating the components into the support, one having ordinary skill in the art would find reasonable expectation



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that the prior art catalysts would exhibit a catalyst depth comparable to that respectively claimed, given that Applicants' claims are merely directed to the catalyst composition itself, and not any specific methods by which the catalyst is prepared (the term "applying" in claim 36 alludes to any of a variety of known method steps, such as impregnation, co-precipitation, incipient wetness, etc.). Further, the methods for obtaining Patentees' catalysts as discussed above are considered to obtain the surface layer depths comparable to that instantly claimed.

For these reasons, Applicants' arguments are not persuasive, and the aforementioned rejections are maintained.

### ***Conclusion***

5. Although Applicants' amendments necessitated the new ground of rejection under 35 U.S.C. § 112, second paragraph, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

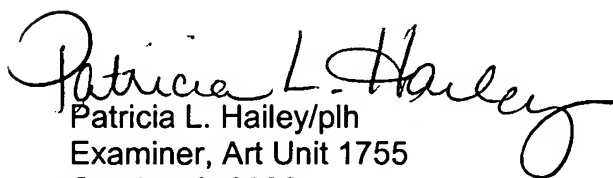
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
October 6, 2006

  
J.A. LORENGO  
SUPERVISORY PATENT EXAMINER